# THREE NEW SPECIES OF *SENEGALIA* (FABACEAE) FROM BRAZIL

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ABSTRACT

**Senegalia irwinii** Seigler, Ebinger, & P.G. Ribeiro from the states of Bahia, Minas Gerais, and Rio de Janeiro; **S. harleyi** Seigler, Ebinger, & P.G. Ribeiro from the states of Bahia, Minas Gerais, and Paraná; and **S. hatschbachii** Seigler, Ebinger, & P.G. Ribeiro from the states of Minas Gerais, Paraná, and São Paulo in Brazil are described, illustrated and compared to their probable nearest relatives, *Senegalia mattogrossensis* (Malme) Seigler & Ebinger, *Senegalia martiusiana* (Steud.) Seigler & Ebinger, and *Senegalia tucumanensis* (Griseb.) Seigler & Ebinger, respectively.

Key Words: Fabaceae, IUCN Red List, Mimosoideae, *Senegalia*

RESUMEN

Se describen, ilustran y comparan, las especies **Senegalia irwinii** Seigler, Ebinger, & P.G. Ribeiro de los estados de Bahia, Minas Gerais, y Rio de Janeiro; **S. harleyi** Seigler, Ebinger, & P.G. Ribeiro de los estados de Bahia, Minas Gerais, y Paraná; y **S. hatschbachii** Seigler, Ebinger, & P.G. Ribeiro de los estados de Minas Gerais, Paraná, y São Paulo de Brasil, con las especies afines, probablemente más cercanas, Senegalia mattogrossensis (Malme) Seigler & Ebinger, *Senegalia martiusiana* (Steud.) Seigler & Ebinger, y *Senegalia tucumanensis* (Griseb.) Seigler & Ebinger, respectivamente.

The genus *Senegalia* has previously been treated as part of *Acacia* s.l., but recent morphological and genetic studies have shown that this large genus is polyphyletic. Relationships within the genus *Acacia* s.l., as well as the position of the genus within the Mimosoideae have been clarified by data from molecular studies (Maslin et al. 2003a; Miller & Bayer 2003; Luckow et al. 2003; Miller et al. 2003; Rico-Arce & Bachman 2006; Seigler et al. 2006a; Bouchenak-Khelladi et al. 2010; Gómez-Acevedo et al. 2010; Murphy et al. 2010; Miller & Seigler 2012; Kyalangalilwa et al. 2013). Based on both morphological and molecular data, *Acacia* s.l. is now regarded as comprising at least five genera, *Acacia* s.s., *Acaciella* Britton & Rose (1928), *Mariosousa* Seigler & Ebinger (Seigler et al. 2006b), *Senegalia* Raf. (1838), and *Vachellia* Wight & Arnott (1834) (see Miller & Seigler 2012 for overview of the new generic classification).

Members of *Senegalia* are shrubs, trees, or lianas, unarmed or armed with prickles, but without stipular spines. The prickles usually are scattered, but less commonly are grouped in twos or threes, usually at or near the nodes (Vassal 1972). Leaves are bipinnate and the petiole and primary rachis have sessile or stipitate glands of variable position. Flowers possess a more or less tubular nectary below the usually stipitate ovary. Inflorescences are globose heads (capitula) or spikes, often grouped into complex terminal pseudo-inflorescences or synflorescences. Pods are dehiscent, separating into two valves at maturity, or less commonly indehiscent or separating into indehiscent one seeded articles. The seeds are uniseriate.

The genus *Senegalia* consists of approximately 100 taxa in the Americas (unpublished data), as well as 69

in Africa, 43 in Asia, and two in Australia (Maslin et al. 2003a,b). Eight species occur in two or more areas. Approximately half of the American species occur in Brazil. During the course of our work on the genus *Senegalia* Raf. of Brazil, three undescribed species were noted from herbarium materials of Bahia, Minas Gerais, Paraná, São Paulo, and Rio de Janeiro. These taxa are clearly distinctive and are herein proposed as new species.

**Senegalia irwinii** Seigler, Ebinger, & P.G. Ribeiro, sp. nov. (**Fig. 1**). TYPE: BRAZIL. MINAS GERAIS: 40 km E of Belo Horizonte, near BR-31, 1800 m, 16 Jan 1971, *H.S. Irwin, R.M. Harley & E. Onishi 30523* (HOLOTYPE: MO; ISOTYPES: MBM, NY).

*Senegalia irwinii* Seigler, Ebinger & P.G. Ribeiro differs from other Senegalia species by leaf size (100–170 mm long), petiolar gland usually one or two, columnar (1.1–3.1 mm) apex 0.5–0.8 mm in diameter, pinnae 5 to 11 pairs/leaf (60–115 mm), 10–18 mm between pinna pairs, leaflets 45 to 85pairs/pinna, midvein subcentral; inflorescence a globose head 14–20 mm across, flowers sessile or subsessile, ovary glabrous.

Climbing **shrub** or small **tree** to 5 m tall; bark not seen; twigs dark purplish brown, not to slightly flexuous, terete to slightly ridged, glabrous to lightly puberulent; short shoots absent; prickles dark purplish brown throughout, flattened, recurved to rarely straight, woody, 1–4 × 1–4 mm at the base, glabrous, scattered along the twig, petiole and rachis. **Leaves** alternate, 100–170 mm long; stipules dark brown, linear, symmetrical, flattened, straight, herbaceous, 2–5 × 0.2–0.5 mm near the base, glabrous to puberulent, early deciduous; petiole adaxially grooved, 20–38 mm long, lightly puberulent; petiolar gland usually 1 or 2, one located near the middle of the petiole, one at or near the first pinna pair, columnar, 1.1–3.1 mm long, apex 0.5–0.8 mm across, orbicular, depressed, glabrous; rachis adaxially grooved, 80–135 mm long, lightly puberulent, a columnar gland 0.6–1.2 mm long usually between the upper, and sometimes other pinna pairs, apex 0.4–0.8 mm across, orbicular, depressed, glabrous; pinnae 5 to 11 pairs/leaf, 60–115 long, 10–18 mm between pinna pairs; paraphyllidia 0.8–1.4 mm long; petiolule 1.9–4.2 mm long; leaflets 45 to 85 pairs/pinna, opposite, 0.6–1.2 mm between leaflets, linear, 6–12 × 1.2–1.8 mm, lightly pubescent with appressed hairs beneath, shiny and glabrous above, lateral veins not obvious, 1 vein from the base, base oblique, truncate on one side, margins lightly ciliate, apex acute, midvein subcentral. **Inflorescence** a densely 20- to 40-flowered globose head 14–20 mm across, in axillary and terminal pseudo-paniculate clusters, the main axis to 300 mm long; peduncles 5–15 × 0.4–0.6 mm thick, puberulent; receptacle not enlarged, slightly elongated; involucre rarely a single small bract located medially on the peduncle, early deciduous; floral bracts spatulate, 0.8–1.2 mm long, puberulent, early deciduous. **Flowers** sessile or subsessile, cream; calyx 5-lobed, 2.5–3.2 mm long, puberulent; corolla 5-lobed, 3.4–4.2 mm long, glabrous or nearly so, lobes one-quarter the length of the corolla; stamens 50 to 70; stamen filaments 8–10 mm long, distinct; anther glands absent; ovary glabrous, sessile to short-stalked. **Fruits** oblong, 75–130 × 22–28 mm, straight, flattened, not constricted between the seeds, chartaceous, transversely striated, puberulent, eglandular, dehiscent along both sutures; stipe 8–12 mm long; apex obtuse, short beaked. **Seeds** not seen.

*Distribution and ecology.*—Deciduous to evergreen savannas, disturbed second growth forest and thickets from 1,100 to 1,800 m in the states of Bahia, Minas Gerais, and Rio de Janeiro in eastern Brazil.

*Phenology.*—Flowering Jan–Mar.

Local Names and Uses.—None known.

*Etymology.*—*Senegalia irwinii* is named after Howard S. Irwin, a well-known authority on Fabaceae, who led eight expeditions to Brazil and Guiana between 1960 and 1972, and collected extensively in northeastern Brazil.

*IUCN Red List category.*—DD, data deficient. A rare endemic restricted to the states of Bahia, Minas Gerais and Rio de Janeiro, Brazil. As we have seen fewer than 10 collections, the species is possibly threatened (IUCN 2001).

PARATYPES: **BRAZIL: Bahia:** 3 km da divisa Minas Gerais, 9 Jul 1964, *L. Duarte & A. Castellanos 297* (NY, RB). **Minas Gerais:** 10 km. by road N of Gouvêia, 1320 m, 11 Apr 1973, *W.R. Anderson 8664* (CM, F, NY, UB); Jardim Botanico, Belo Horizonte, 15 Jan 1934, *M. Barreto 6458* (F); 17 km NE of Diamantina, road to Mendanha, 1250 m, 29 Jan 1969, *H.S. Irwin, R. Reis dos Santos, R. Souza & S.F. da Fonseca 22870* (MO, NY, US); Belo Horizonte, campus da UFMG, 4 May 1995, *J.A.Lombardi & L.G. Temponi 760* (NY); 1879, *J. Miers 241b* (BM); Brumadinho, Inhotim, Borda de mata semi decidua da trilha da Caixa D'Agua, 20°08'21"S, 44°14'13"W, 870 m, 22 Jan 2008, *J.G. Oliveira & F.M. Rodrigues 55* (BHCB). **Rio de Janeiro:** Município de Campos dos Goytacazes, Bom Jesus, Assentamento dos Sem Terra (núcleo 1-N1), mata do Bom Jesus, mato do Caixãou mata da Santa Casa, 3 Oct 2000, *J.M.A. Braga 6340* (RB); Rio das Ostras, Reserva Biológica a União, 50 m, 14 Jun 2001, *J.M.A. Braga 6667* (MBM, NY, RB).

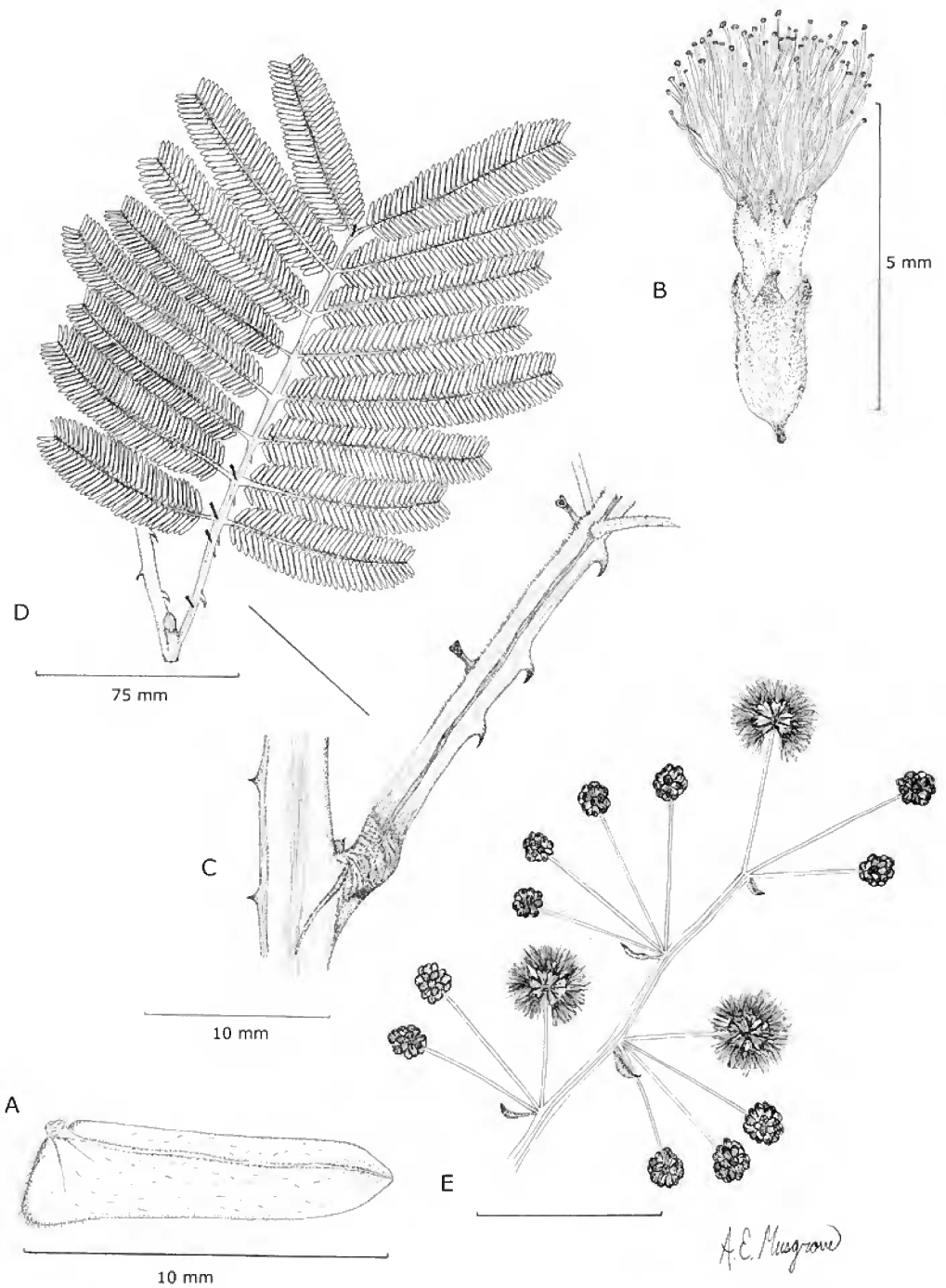


Fig. 1. *Senegalia irwinii* Seigler, Ebinger, & P.G. Ribeiro; **A.** leaflet, adaxial surface; **B.** flower; **C.** portion of twig and petiole with prickles and petiolar glands; **D.** leaf; **E.** pseudo-inflorescence. A, B, D from *Irwin et al. 30523* (NY); C, E from *Irwin et al. 22870* (MO).

Morphologically similar to *Senegalia mattogrossensis* (Malme) Seigler & Ebinger, this new species has a comparable range in eastern Brazil, but grows at a higher elevation, occurring above 1,100 m. *Senegalia mattogrossensis*, in contrast, is found below 1,000 m. Morphologically, these two taxa are distinct with *S. mattogrossensis* being densely pubescent on the twig; petiole and rachis with yellow hairs to 0.8 mm long. *Senegalia irwinii,* in contrast, lacks the yellow pubescence, the twig, petiole, and rachis are glabrous to lightly puberulent with gray hairs. This taxon also has leaflets that are consistently 6–12 mm long whereas *S. mattogrossensis* has leaflets shorter than 6.5 mm in length

**Senegalia harleyi** Seigler, Ebinger, & P.G. Ribeiro, sp. nov. (**Fig. 2**). TYPE: BRAZIL. BAHIA: 12 km SE of Barra do Choça, road to Itapetinga, 700 m, 30 Mar 1977, *R.M. Harley, S.J. Mayo, R.M. Storr, T.S. Santos & R.S. Pinheiro 20161* (HOLOTYPE: NY; ISOTYPES: CEPEC, IPA, RB, UEC, US).

*Senegalia harleyi* Seigler, Ebinger & P.G. Ribeiro differs from other *Senegalia* species by leaf size (60–130 mm long), petiolar glands one to three scattered along the petiole, sessile, oval to orbicular (0.7–2.5 mm across), pinnae 11 to 25 pairs/leaf, distance between pinna pairs (3–7 mm), leaflets 38 to 80 pairs/pinna, distance between leaflet pairs (0.2–0.4 mm), midvein subcentral; inflorescence a globose head 12–16 mm across, flowers sessile, anther glands present, ovary glabrous.

Climbing **shrub** or small **tree** to 5 m tall; bark not seen; twigs dark brown to dark purplish brown, slightly flexuous, terete to slightly ridged, densely pubescent with mostly erect dark brown hairs to 0.6 mm long; short shoots absent; prickles dark brown below, commonly lighter brown above, flattened, commonly recurved, woody, 1–3 × 1–3 mm at the base, densely pubescent with straight hairs, common in lines on the twig ridges, also on petiole and rachis. **Leaves** alternate, 60–130 mm long; stipules dark brown, linear, symmetrical, flattened, straight, herbaceous, 2–5 × 0.3–0.8 mm, densely ciliate, early deciduous; petiole shallowly adaxially grooved, 6–15 mm long, densely pubescent; petiolar glands 1 to 3, scattered along the petiole with one just below the first pinna pair, sessile, oval to orbicular, 0.7–2.5 mm across, apex flattened or the margins raised to form a cup, glabrous; rachis adaxially grooved, 55–120 mm long, densely pubescent, an oval to orbicular gland 0.4–1.2 mm across between the upper 1 to 6, and sometimes other pinna pairs, apex cup-shaped, glabrous; pinnae 11 to 25 pairs/leaf, 23–58 mm long, 3–7 mm between pinna pairs; paraphyllidia 0.4–0.8 mm long, commonly absent; petiolule 0.4–1.1 mm long; leaflets 38 to 80 pairs per/pinna, opposite, 0.2–0.4 mm between leaflets, linear, 2.5–4.4 × 0.4–0.7 mm, glabrous to scattered pubescent below, lateral veins not obvious, 1 vein from the base, base oblique, margins ciliate, apex acute, midvein subcentral. **Inflorescence** a densely 20- to 35-flowered globose head 12–16 mm across, in terminal and axillary pseudo-paniculate clusters, the main axis to 400 mm long; peduncles 4–9 × 0.4–0.7 mm thick, densely pubescent; receptacle elongated, not enlarged; involucre a small bract located on the upper half of the peduncle, early deciduous; floral bracts spatulate, 0.5–0.8 mm long, puberulent, early deciduous. **Flowers** sessile, white to cream; calyx 5-lobed, 1.4–2.1 mm long, puberulent; corolla 5-lobed, 2.3–3.5 mm long, puberulent, lobes one-sixth the length of the corolla; stamens 50 to 79; stamen filaments 6.5–8.0 mm long, distinct; anther glands present; ovary glabrous, sessile to subsessile. **Fruits** oblong, 60–130 × 13–26 mm, straight, flattened, not constricted between the seeds, chartaceous, lightly transversely striated, pubescent, eglandular, dehiscent along both sutures; stipe 6–11mm long; apex acuminate to obtuse, short beaked. **Seeds** 5–6 × 4–5 mm, ovate to elliptic, flattened, smooth; pleurogram U-shaped.

*Distribution.*—Humid tropical forest, disturbed second growth forests and thickets from 500 to 2200 m in the states of Bahia, Minas Gerais, and Paraná, Brazil.

*Phenology.*—Flowering Jan–Mar.

*Local Names and Uses.*—unha-de-gato (Mucugê- Bahia)

*Etymology.*—Named after Raymond M. Harley, authority on the flora of the caatinga of northeastern Brazil and collector of many legumes from that area.

*IUCN Red List category.*—DD, data deficient. *Senegalia harleyi* appears to be a relatively common species in eastern Brazil. As we have seen more than 35 collections of this species from Bahia, Minas Gerais, and Paraná, and it often occurs in disturbed second growth forests, it does not seem probable that *Senegalia harleyi* is threatened. However, humid tropical forest is disappearing and additional data concerning the future of *Senegalia harleyi* need to be obtained (IUCN 2001).

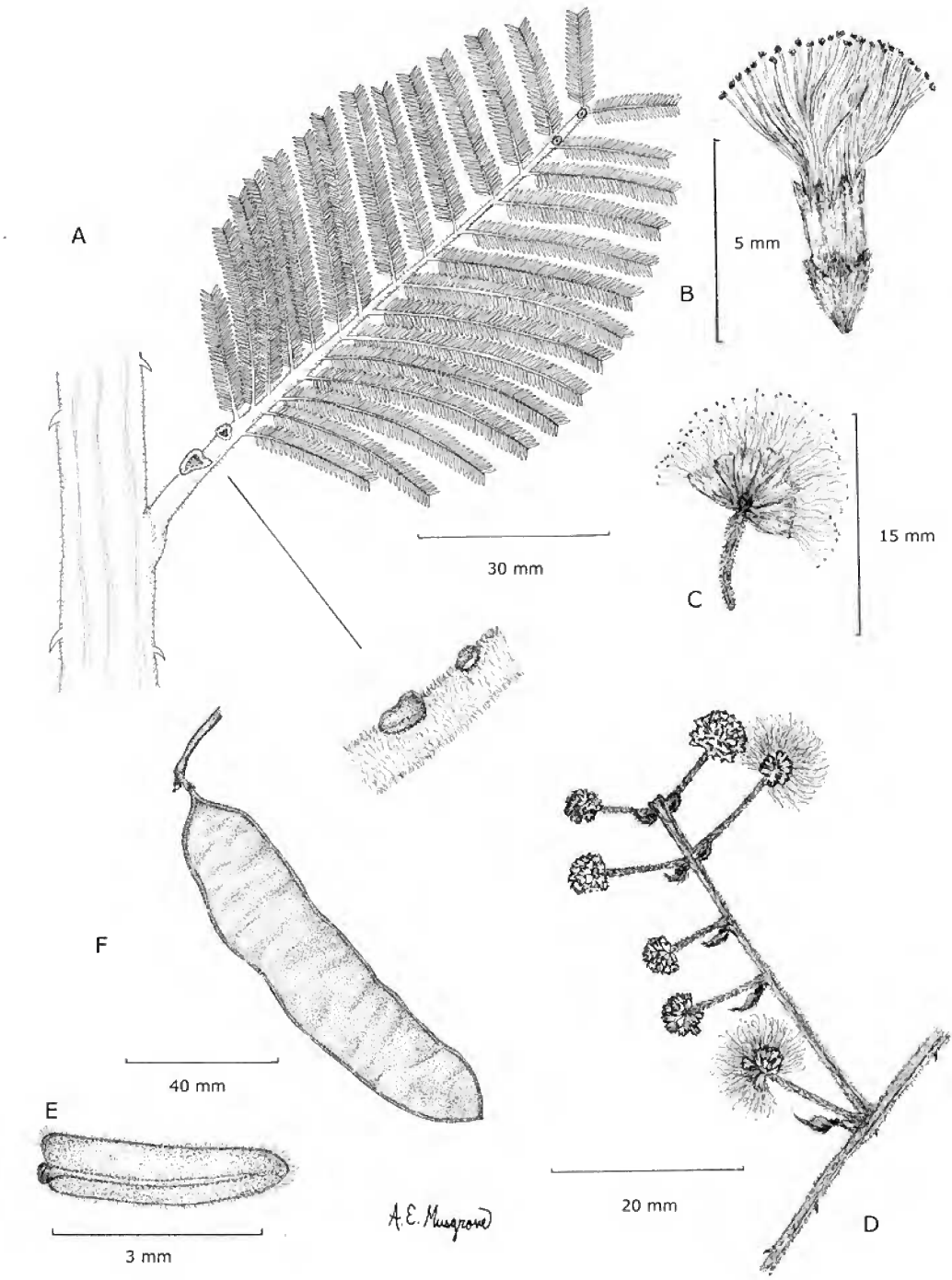


Fig. 2. *Senegalia harleyi* Seigler, Ebinger, & P.G. Ribeiro. **A.** Leaf habit with twig and petiolar glands; **B.** flower; **C.** inflorescence; **D.** pseudo-inflorescence; **E.** leaflet adaxial surface; **F.** fruit. A from *de Queiroz et al. 7118* (HUEFS); B, C, D from *Belém and Méndes 369* (NY); E, F from *de Queiroz et al. 7118* (HUEFS).

**Paratypes: BRAZIL: Bahia:** Mucugê, s.l., 2 Oct 2005, *J.G. Carvalho-Sobrinho et al. 736* (HUEFS); Estrada para Encruzilhada, ca. 1 km de Divisópolis, 6 Feb 2002, *P.A. Fiaschi et al. 993* (SPF); Ibicoara, Estrada entre Brejo de Cima e a rodovia Mucugê-Barra da Estiva, caminho para Cascavel, 5 Feb 2003, *F. França et al. 4320* (HUEFS); Morrão, encosta, 28 Jan 2003, *F. França et al. 4005* (HUEFS); Mucagê na estrada para Brejo de Campos gerais (cerrado), 31 Jan 2000, *A.M. Giulietti & R.M. Harley 1978* (RB); s.l., 28 Jan 2010, Divisopólis, estrada para Pedra Azul, 900 m, 6 Feb 2002, *M. Groppo, Jr., A.C. Marcato, P. Fiaschi & J.R. Pirani 1062* (F, HUEFS, MBM); *M.L. Guedes et al. 16928* (ALCB); Barra da Estiva, ca. 10 Km N da cidade, rod. p/ Ibicoara, próx. ao Rio Preto, 2 Feb 1974, *R.M. Harley 15865* (CEPEC, RB); 2 km SW of Morro do Chapeu on Utinga road, 1000 m, 3 Mar 1977, *R.M. Harley, S.J. Mayo, R.M. Storr, T.S. Santos & R.S. Pinheiro 19317* (CEPEC, NY, RB); 3 km S de Candido Sales, BR-116, 19 Nov 1984, *G. Hatschbach 47351* (BR, CEPEC, HBG, INPA, MBM, MO, MU, NY, US, RB); 21 km de Ibicoara na rod. para Jussiape, 27 Jan 2000, *J.G. Jardim, W.W. Thomas, S.C. de Sant'Ana, M.V. Alves, A.C. Araújo & B.M. Torke 2562* (CEPEC, NY, RB); rodovia para Utinga, ramal para a torre Telebahia, 8 Sept 1990, *H.C. Lima, S. M. de Faria, & H.S. Brito 3884* (CEPEC, RB); Serra do Gobira, 21 Jan 2005, *J. G.Nascimento, T.S. Nunes, and Milton 331* (HUEFS); Povoado de Água Fria, 16 Feb 2002, *T.S.Nunes 885* (HUEFS); Seabra, 900 m, 13 Feb 1987, *J.R. Pirani, R.M. Harley, B.L. Stannard, I. Cordeiro, C. Kameyama & A.M. Giulietti 2013-A* (HUEFS, NY); Elísio Medrado, Serra da Jiboia, Fazenda Jequitibá, na Estrada para Monte Cruzeiro, 2 Mar 2001, *L.P. Queiroz et al. 6466* (HUEFS); Capão do Correia, 2200 m, 24 Jan 2000, *L.P. Queiroz, L.F.P. Gusmão & B.M. da Silva 5635* (CEPEC, HUEFS); 10 km de Jussiape em direção a Barra da Estiva, 1088 m, 15 Jun 2002, *L.P. Queiroz, E.R. de Souza, J.G. Jardim, J.G. Sobrinho & B.M. da Silva 7118* (HUEFS); s.l., 12 Dec. 2004, *M.T.S. Stradmann & P. Castilho 1005* (ALCB, CEPEC). **Minas Gerais:** 30 km de Curral de Bentro para Águas Vermelhas, 29 Jan 1965, *R.P. Belém & J.M. Mendes 369* (NY, RB); 52 km de Montes Claros para Pirapora, 30 Jan 1965, *R.P. Belém & J.M. Mendes 405* (CEPEC, NY); Biri-Biri, 23 Jan 1978, *G. Hatschbach 40845* (MO, NY, UC); Curtidor, Felisberto Caldeira, 16 Feb 1973, *G. Hatschbach & Z. Ahumada 31675* (NY, TEX); Bem Querer, Cristália, 850 m, 10 Feb 1991, *G. Hatschbach & O.S. Ribas 54089* (BR, CEPEC, HBG, MBM, MO, NY, US); Serra do Cabral. Joaquim Felício, 16 Jan 1996, *G. Hatschbach, M. Hatschbach & J.M. Silva 64078* (NY); Chapada dos Gerais, Fazenda Santa Rita, 14 Jan 1996, *G. Hatschbach, M. Hatschbach & J.M. Silva* 64293 (NY); 3 km SW of Diamantina on road to Gouveia, 1300 m, 13 Jan 1969, *H.S. Irwin, R. Reise dos Santos, R. Souza & S.F. da Fonseça 21859* (CM, MO, NY, UB); 33 km SW of Diamantina near Gouveia, 1150 m, 19 Jan 1969, *H.S. Irwin, R. Reise dos Santos, R. Souza & S.F. da Fonseça 22286* (MBM, MO, NY); 38 km NE of Francisco Sá, road to Salinas, 1000 m, 13 Feb 1969, *H.S. Irwin, R. Reise dos Santos, R. Souza & S.F. da Fonseça 23243* (NY, UB, UEC); 20 km W of Montes Claros, road to Agua Boa, 1000 m, 24 Feb 1969, *H.S. Irwin, R. Reise dos Santos, R. Souza & S.F. da Fonseça 23829* (NY, UB, US); 15 km E of Diamantina, 1100 m, 20 Mar 1970, *H.S. Irwin, S.F. da Fonseça, R. Souza, R. Reise dos Santos & J. Ramos 27981*(NY, UB, US); 2 km N of São João da Chapada, 1200 m, 25 Mar 1970, *H.S. Irwin, S.F. da Fonseça, R. Souza, R. Reise dos Santos & J. Ramos 28314* (GH, NY, UB); Grão-Mogol, 11 Mar 1999, *M.L. Kawasaki & A. Rapini 1086* (NY, SP); Coronel Morta, *M. Magalhães 15212* (NY); Km 938, da BR-4 entre Medina e Limeira, *G. Pabst & E. Pereira 8341* (R, RB); Km 938 da BR-04, entre Medina e Limeira, 16 Jan 1965, *G. Pabst & E. Pereira 9452* (ILL, R); 7 km SW de Itamarandiba, BR-120, 970 m, 1 Dec 1984, *B. Stannard, J.D.P. Oliveira & R.M. Harley 36251* (F, NY, RB, SPF). **Paraná:** Campina Grande de Sul, Ribeirão do Cedro, BR-2, 18 Feb 1962, *G. Hatschbach 8940* (UPCB, US); Morro Anhangava, Quatro Barras, 14 Feb 1992, *Y.S. Kuniyoshi 5445* (MBM, NY).

Nearly all of the specimens of this taxon examined were originally identified as *Acacia martiusiana* (Steud.) Burkart [= *Senegalia martiusiana* (Steud.) Seigler & Ebinger]. These taxa are similar and probably related, but are easily separated by the structure of the petiolar gland and sessile vs. pedicellate flowers. The petiolar glands of *S. harleyi* are sessile, oval to orbicular, 0.7–2.5 mm across, with the apex flattened or the margins raised to form a cup; those of *S. martiusiana*, in contrast, have columnar petiolar glands that are 0.5–1.1 mm long, and an apex that is 0.4–0.8 mm across. Further, all specimens of *S. harleyi* have sessile flowers whereas all specimens of *S. martiusiana* have pedicellate flowers, the stalks 0.9–1.5 mm long. These two taxa occur in eastern and southern Brazil, *S. martiusiana* being found in the states of Rio de Janeiro and São Paulo, and *S. harleyi* in Bahia, Minas Gerais and Paraná.

**Senegalia hatschbachii** Seigler, Ebinger, & P.G. Ribeiro, sp. nov. (**Fig. 3**). Type: BRAZIL. Minas Gerais: Manhumirim, 9 Feb 1973, *G. Hatschbach & A. Ahumada 31392* (holotype: F; isotypes INPA, MBM, MO, MU, NY).

*Senegalia hatschbachii* Seigler, Ebinger & P.G. Ribeiro differs from other *Senegalia* species by leaf size (90–180 mm long), a solitary columnar petiolar gland (1–2.5 mm), apex 0.2–0.6 mm in diameter, columnar rachis glands between the uppermost 1 to 6 pinna pairs, pinnae 13 to 30 pairs/leaf, 4–9 mm between pairs, leaflets 45 to 65 pairs/pinna, distance between leaflet pairs (0.4–0.7 mm), midvein central to subcentral; inflorescence a globose head (9–15 mm across), ovary pubescent, stipe to 1.1 mm.

Climbing **shrub** or small **tree** to 6 m tall; bark not seen; twigs dark purplish brown to dark purple, slightly flexuous, terete to slightly ridged, lightly puberulent to glabrous; short shoots absent; prickles light brown, apex usually dark brown to purple, somewhat flattened, mostly recurved, woody, 1–4 × 1–6 mm at the base, glabrous, scattered along the twig, petiole and rachis. **Leaves** alternate, 90–180 mm long; stipules light to usually dark brown, linear, symmetrical, flattened, straight, herbaceous, 2–7 × 0.6–1.4 mm near the base, glabrous, early deciduous; petiole adaxially grooved, 7–15 mm long, puberulent; petiolar gland solitary, located on the upper half of the petiole, columnar, 1.0–2.5 mm long, glabrous, apex 0.2–0.6 across, depressed, glabrous; ra-

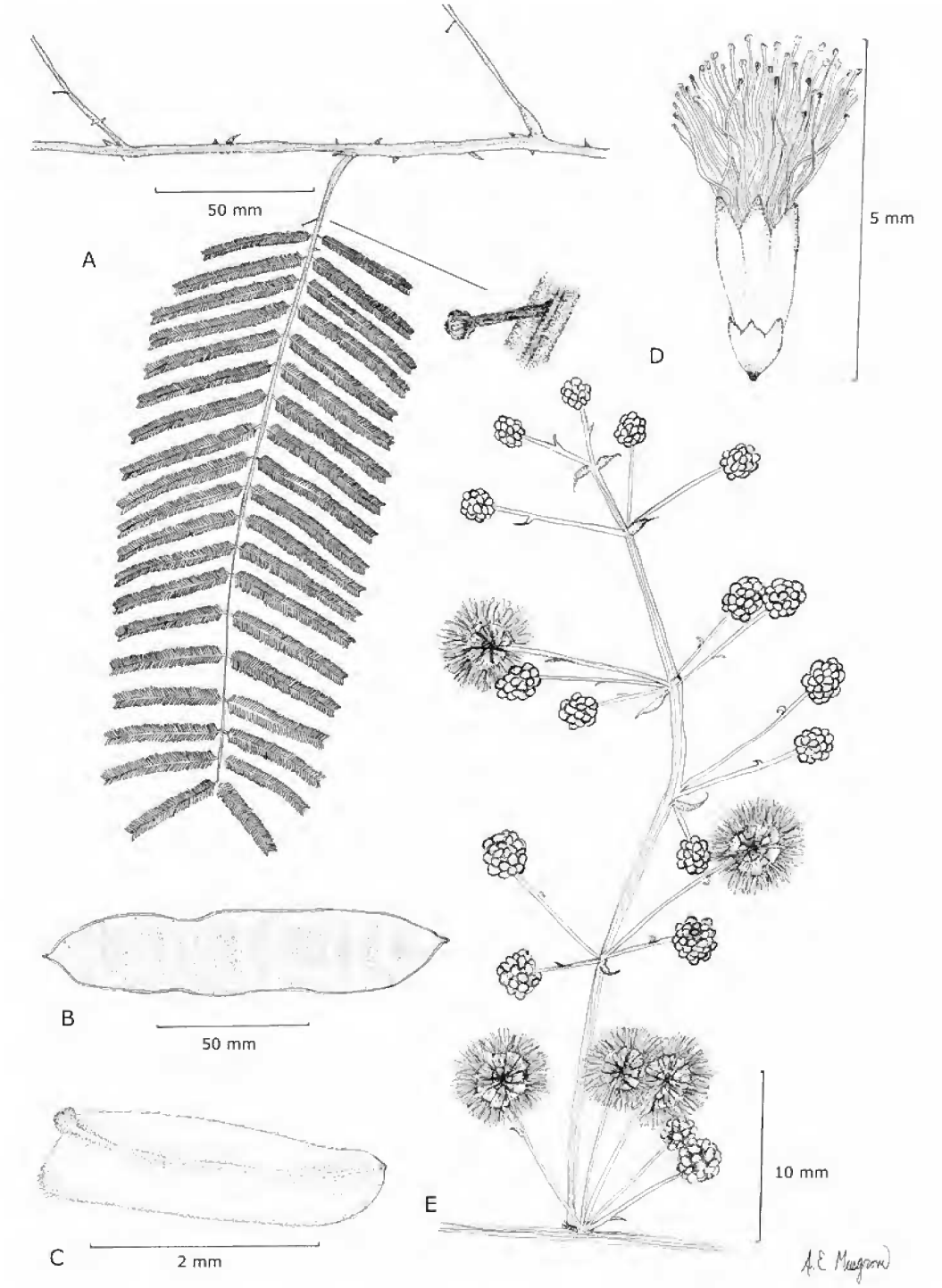


Fig. 3. *Senegalia hatschbachii* Seigler, Ebinger, & P.G. Ribeiro. **A.** leaf habit with petiolar nectary and twig; **B.** fruit; **C.** leaflet, adaxial surface; **D.** pseudo-inflorescence; **E.** Flower. A, B from *Gibbs and Leitão Filho 4029* (F); C, D, E from *de Mello s.n.* (S).

chis adaxially grooved, 80–170 mm long, puberulent, a columnar gland 0.3–1.0 mm long, between the upper 1 to 6 pinna pairs, apex 0.2–0.5 mm across, depressed, glabrous; pinnae 13 to 30 pairs/leaf, 25–45 mm long, 4–9 mm between pinna pairs; paraphyllidia absent; petiolule 0.4–1.2 mm long; leaflets 45 to 65 pairs/pinna, opposite, 0.4–0.7 mm between leaflets, linear, 2.2–4.5 × 0.4–1.0 mm, glabrous to lightly pubescent, lateral veins not obvious, 1 vein from the base, base oblique and obtuse on one side, margins lightly ciliate, apex obtuse, midvein central to subcentral. **Inflorescence** a densely 20- to 35-flowered globose head 9–15 mm across, in axillary and terminal pseudo-paniculate clusters, the main axis to 300 mm long; peduncles 3–14 × 0.3–0.5 mm thick, puberulent; receptacle slightly enlarged; involucre a single small bract located on the upper half of the peduncle, early deciduous; floral bracts spatulate, 0.4–0.8 mm long, puberulent, early deciduous. **Flowers** sessile, white to cream; calyx 5-lobed, 0.8–1.7 mm long, puberulent; corolla 5-lobed, 1.9–3.1 mm long, glabrous, lobes one-quarter the length of the corolla; stamens 50 to 70; stamen filaments 5.5–7.5 mm long, distinct; anther glands absent; ovary pubescent, on a stipe to 1.1 mm long. **Fruits** oblong, 70–140 × 17–27 mm, straight, flattened, not constricted between the seeds, coriaceous, lightly transversely striated, puberulent, eglandular, dehiscent along both sutures; stipe 6–12 mm long; apex obtuse. **Seeds** not seen.

*Distribution and ecology.*—Gallery forests, disturbed wet second growth forests, and thickets from near sea level to 1,000 m in the states of Minas Gerais, Paraná, and São Paulo, Brazil.

*Phenology.*—Flowering Dec–Feb.

*Local Names and Uses.*—None known.

*Etymology.*—Named for Gert Guenther Hatschbach (1923–2013) Brazilian botanist and taxonomist; Herbarium Director at the Botanical Museum of Curitiba in Paraná.

*IUCN Red List category.*—DD, data deficient. This species has a limited distribution, being known from only southeastern Brazil. As we have seen fewer than 10 collections, it seems possible that this species presently is threatened. Humid tropical forest is disappearing and additional data concerning the future of *Senegalia hatschbachii* need to be obtained (IUCN 2001).

**Paratypes: BRAZIL: Paraná:** Patrimônio, 9 Mar 1915, *P. Dusén s.n.* (S); Ponta Grossa, 1904, *P. Dusén s.n.* (G); Capão Grande, 14 Apr 1909, *P. Dusén 7956* (GH, S, US); Jaguariahyva, 770 m, 1 Apr 1915, *P. Dusén 16963* (G, MO, S); Orto Florestal, Maringa, 7 Dec 1965, *G. Hatschbach, J. Lindeman & H. Haas 13247* (F, MBM, NY, UPCB, US); Jaguariahyva, 740 m, 3 Jun 1914, *G. Jönsson 509a* (F, G, GH, MO, S); Ponta Grossa, Vila Velha, 800—920 m, 20 Jan 1965, *L.B. Smith & R.M. Klein 14887* (FLOR, MICH, NY, R, US). **São Paulo:** Fazenda Santa Genebra, 23 Nov 1976, *P. Gibbs & H.F. Leitão Filho 4029* (F, SP, UEC); Campinas, 12 Mar 1871, *J.C. de Mello s.n.* (S); Santa Maria da Serra, 13 Dec 1976, *J.J. Tamashiro 4183* (F, MBM, NY, UEC).

The columnar petiolar gland with a thin stalk to 2.5 mm long and small bulbous apex separates this taxon from most other New World members of *Senegalia*. Quite similar to *S. tucumanensis*, *S. hatschbachii* differs in having twigs that are dark purplish brown to dark purple (usually light brown throughout in *S. tucumanensis*); petioles 7–15 mm long (17–30 mm long in S. tucumanensis); leaflets 2.2–4.2 × 0.5–1.0 mm (5–8 × 1.1–2 mm in *S. tucumanensis*); and lateral veins of the leaflets not obvious (lateral veins obvious in *S. tucumanensts*).

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